

The questions for the final examination in anatomy as quadruplets for first-year students of general medicine

Each question covers both microscopic and macroscopic aspects of organ structure, its syntopy, vascular supply, innervation and lymphatics; also its development including the most frequent birth defects; concerning the muscles, it is necessary to know their beginning, attachment, innervation and function. In topographic anatomy questions it is necessary to first define the region (borders), including palpable structures, specify the nature of the skin that covers it, and any special features of the subcutaneous tissue. Only then you should proceed to the fascias, groups of muscles and course of the main neurovascular bundles.

1. Structure and types of bones, innervation and blood supply of the bone (draw a scheme)
Salivary glands – structure, syntopy, innervation
Mesencephalon (midbrain) – grey and white matter, draw cross a section
Heart development and its common birth defects
2. Osteogenesis, ossification, remodeling and growth of bones
Lesser sac (omental bursa), its recesses (draw a scheme)
Auditory pathway
Arteries of the upper limb – course, syntopy, branches
3. Connections of bones, structure and types of joints
Stomach – structure of the wall, divisions, vascular supply, innervation, lymphatic drainage
Neurotransmitters in the CNS, main brain chemical systems
Vascular development, structure of the arteries, veins, lymphatic vessels, collateral circulation
4. The osseous nasal cavity, relations to neighboring structures
Liver – structure, nutritional and portal vascular bed, intrahepatic bile ducts
Neural tube development and its differentiation, defects of neural tube closure
Coronary arteries, cardiac veins and nerves of the heart, coronarography
5. Bony orbit – walls, contents, relation to neighboring structures, passages
Gallbladder and extrahepatic bile ducts (draw a scheme)
Main functional areas of the cerebral cortex
Heart – description, prenatal and postnatal circulation
6. Skull, skull of the neonate and its development
Duodenum – divisions, positions, syntopy (draw a scheme), blood supply
Floor of the rhomboid fossa and cranial nerves nuclei (draw a scheme)
Cardiac wall arrangement, cardiac skeleton, chambers (draw a section through the ventricles)
7. Vertebrae, vertebral column and its development, connections, curvatures and motility
Pharynx – structure, syntopy, its muscles, blood supply, innervation
Cerebellum – structure, subdivision and functional organization, nuclei and afferent connections
Portal vein – tributaries, portocaval (portosystemic) anastomoses
8. Craniovertebral connections
Lungs – description, syntopy, bronchopulmonary segments
Retina – structure, vascular supply (draw a scheme of the eye fundus)
Hypophysis – development, structure of adeno- and neurohypophysis, function, syntopy

9. Skeleton of the thorax and its development, connections and mobility of the ribs
 Uterine (Fallopian) tube – structure, divisions, position, vascular supply, anatomical basis of infertility, extrauterine gravidity, IVF
 Spinal cord segments, positional changes of cord (vertebromedullar topography), cauda equina
 Suprarenal gland – structure and developmental origin of cortex and medulla, function, syntopy (draw a scheme), blood supply, function
10. Temporomandibular joint – structure and mobility
 Development and congenital malformations of the reproductive system
 Diencephalon – structure, subdivision and functional organization
 Mamma – description and structure, blood supply and innervation, lymphatics
11. Development and growth of the limbs, its molecular mechanisms, congenital limb defects
 Pancreas – structure, Langerhans islets, syntopy
 Corticospinal (pyramidal) and corticonuclear tract
 Lymph nodes and collectors of the head and neck
12. Shoulder joint – structure and movements
 Testis and epididymis – structure, division, blood supply, innervation, lymphatics
 Facial nerve, its central and peripheral palsy
 Lymph node – structure and functional zones, sentinel lymph node, lymphatic tissue in organs (MALT, BALT), main lymphatic ducts
13. Elbow joint – structure and movements
 Palate development, cleft defects
 Spinal cord – structure of the grey and white matter (draw a scheme of a cross section)
 External and internal iliac artery
14. Axilla – boundaries, content
 Foregut – its development, derivatives, defects
 Cervical and thoracic sympathetic system
 Endocardium, cardiac valves – structure and function, auscultation points, cardiac skeleton (draw a scheme)
15. Brachial region (draw a transverse section)
 Structure of the kidney – envelopes, cortex, medulla (draw a scheme); nephron (draw a scheme)
 Thalamus – nuclei, afferent and efferent connections of the main nuclei, their function
 Thymus – structure, position and syntopy, function
16. Cubital region
 Paranasal sinuses and their syntopy and development
 Visual pathway and visual cortical areas
 Projections of abdominal organs onto abdominal wall
17. Antebrachial region (draw a transverse section)
 Midgut – its development, derivatives, defects
 Lens – structure and attachment, accommodation; development of the eye
 Internal jugular vein – course and tributaries

18. Topographic anatomy of the hand (draw a transverse section through the palm) and fingers
 - Hindgut – its development, derivatives, defects
 - Lemniscal system (dorsal column tract), proprioceptive and tactile sensation, sensory loss in spinal cord lesions
 - External carotid artery – course, syntopy, branches
19. Gluteal region
 - Larynx – cartilages, ligaments, joints, muscles (draw a frontal section)
 - Bony and membranous labyrinth (draw cross section of the bony cochlea and the cochlear duct)
 - Vestibulocochlear nerve, nystagmus
 - Topography of the peritoneal cavity – supra- and inframesocolic part (draw a transverse section through the lesser sac)
20. Femoral triangle, iliopectineal fossa (draw a scheme)
 - Microscopic structure of teeth and their development
 - Ventricular system of the brain (draw a scheme), circulation of liquor, hydrocephaly
 - Lymph nodes and collectors of stomach, liver and pancreas
21. Popliteal fossa, adductor canal
 - Small intestine – divisions, positions, syntopy, blood supply
 - Neural crest cells and their differentiation
 - Common carotid artery, internal carotid artery
22. Leg region (draw a transverse section)
 - Development and congenital malformations of the urinary system
 - Hypothalamus – subdivisions, connections and function
 - Subclavian artery – course, syntopy, branches
23. Medial and lateral retromalleolar region
 - Tongue, structure, intra- and extraglossal muscles, vascular supply, innervation, lymphatics
 - Basal ganglia, their connections and function, parkinsonism
 - Eyelids, conjunctiva, lacrimal apparatus
24. Topography of the foot (draw a transverse section)
 - Peritoneum – parietal and visceral, greater and lesser omentum, attachment of the viscera
 - Medulla oblongata and pons – grey and white matter, draw cross sections
 - Spleen – structure, position, syntopy, vascular supply
25. Bones and joints of the hand including reading of X-ray images
 - Internal structure of the lungs – alveoli and their microscopic structure, surfactant, development and maturation of the lungs
 - White matter of the hemispheres – association and commissural fibers, internal capsule (draw a scheme of tracts in the internal capsule)
 - Abdominal aorta, position, topographic relations, parietal and visceral branches
26. Bony pelvis as a complex, connections, passages, diameters, planes, sexual dimorphism
 - Bronchi, bronchial tree – structure, lobar and segmental bronchi, syntopy
 - Anatomical background of hypothalamohypophyseal regulation
 - Azygos and hemiazygos vein, vertebral venous plexuses

27. Hip joint – structure, movements, developmental dysplasia of the hip (DDH)
Trachea – description, structure, syntopy (draw a scheme), tracheotomy
Reticular formation – connections, function
Topography of the duodenum and pancreas (draw a scheme)
28. Knee joint – structure, biomechanics and movements
Pharyngeal, palatine and lingual tonsils (Waldeyer's circuit)
Intrinsic and efferent connections of the cerebellum and their function
Development of the eye
29. Talocrural and subtalar joint – structure, movements
Conducting system of the heart – structure and function
Cornea, sclera and vitreous body, corneal reflex
Inferior vena cava – course and tributaries, cavocaval anastomoses
30. Bones and joints of the foot including reading of X-ray images, plantar arches and their support
Rectum and the anal canal – structure, syntopy (draw frontal and sagittal section), vascular supply, lymphatics, sphincters and their innervation
Third division of the trigeminal nerve
Thyroid and parathyroid glands – structure, function, topography, blood supply, function
31. Inguinal region, inguinal canal, hernias
General anatomy (macro and micro) of the gut tube
Anterolateral system of sensory spinal tracts – (spinothalamic, spinoreticular and spinotectal tracts), pain pathways
Iris, ciliary body, choroidea, pupillary light reflex
32. Pelvic floor muscles, ischioanal fossa (draw a frontal section of pelvis), perineal region
Scrotum and envelopes of testis, descent of testis and its defects
Meninges (draw a scheme), vascular supply of the spinal cord, lumbar puncture (spinal tap)
Heart position and projection, X-ray (draw scheme of radiogram), auscultation points
33. Topography of the vertebral canal, anatomical backgrounds of the spinal tap (lumbar puncture) and epidural anesthesia
Prostate – structure, topographic relations, prostatic urethra, ejaculatory ducts
Olfactory and gustatory pathway, olfactory nerve
Lymph nodes and collectors of the upper and lower limb
34. Topography of the abdominal wall, rectus abdominis sheath (draw transverse sections above and below the umbilicus), blood supply, innervation, surgical approaches into abdominal cavity
Renal calices, pelvis, ureter – syntopy
Extraocular muscles (draw a scheme with function and innervation)
Epicardium and pericardium – structure, syntopy, pericardial reflections around the roots of the great vessels, pericardial puncture (pericardiocentesis)
35. Topography of the chest wall (draw scheme of an intercostal space)
Large intestine, structure, divisions (draw a scheme), syntopy, vascular supply, innervation, lymphatics, positions of the vermiform appendix and its projections on the abdominal wall
Glossopharyngeal and vagus nerve
Cranial veins, dural venous sinuses, cerebral veins

36. Submandibular triangle, carotid triangle (draw a scheme)
Kidney – description, position, syntopy (draw a scheme), birth defects
Sacral plexus and its branches
Tympanic cavity, auditory ossicles, auditory tube
37. Lateral cervical region, scalene fissure
Uterus – position, fixation, syntopy, birth defects
Brain vessels and blood-brain barrier, brain dysfunction and damage due to specific vascular occlusion
Skin – epidermis and dermis, skin types, skin receptors, skin appendages (hairs, nails, glands)
38. Superficial regions of the face
External female genital organs, perineum
Ventral and dorsal spinal nerve root, dorsal root ganglion, draw a general scheme of a spinal nerve and its branches, autonomic fibers in the spinal nerve
Arteries of the lower limb - course, syntopy, branches
39. Infratemporal and pterygoplatine fossa
Liver – segments, syntopy (draw a scheme of the visceral surface)
Limbic system – connections and function (cortical areas, hippocampal formation, amygdalar complex)
Lymph nodes and collectors of the vagina, uterus and ovaries
40. Layers of the scalp, frontal and temporal regions
Uterus – shape and divisions, structure of the wall, endometrial cycle, vascular supply, lymphatics
Cranial and sacral parasympathetic system
Superficial and deep veins of the upper and lower limb, the perforators
41. Origin and development of muscles, molecular mechanisms
Oesophagus – structure, syntopy
Femoral nerve
Eyeball (draw a horizontal section) – vascular supply, innervation, chambers, aqueous humor and its circulation
42. General features of the striated muscle, its auxiliary structures (motor end plate, motor unit, muscle spindle, Golgi tendon organ), motor and proprioceptive innervation
Nasal cavity, choanae, vascular and nerve supply
Oculomotor, trochlear, and abducens nerve
Ascending aorta, aortic arch, thoracic aorta (course, syntopy, branches)
43. Muscles and fascias of the head
Ovary – structure and position, ovarian cycle, vascular supply
Segmental innervation, radicular areas, dermatomes, Head's zones (zones of referred visceral pain), sensory receptors, peripheral nerve regeneration
Superior vena cava, brachiocephalic veins, jugular veins
44. Muscles and fascias of the neck (draw a transverse section of the neck)
Stomach – shape, position, syntopy, projections
Abdominal and pelvic autonomic plexuses and ganglia, enteric nervous system
External and internal base of the skull – openings for the vessels and nerves

45. Muscles and fascias of the chest, diaphragm – structure, passages, function, innervation, diaphragmatic hernias
Primary and permanent dentition formula, eruption, types of occlusion
Radial and axillary nerve and their palsy
External acoustic meatus and tympanic membrane (draw an otoscopic view), paracentesis (myringotomy)
46. Muscles of the abdominal wall, fascias, function
Macroscopic structure of the teeth, fixation, gingivodental junction, innervation and vascular supply
Accessory and hypoglossal nerve
Lymph nodes and collectors of the intestines, lymph nodes and collectors of testis
47. Inguinal region, inguinal canal (draw a scheme), inguinal hernias
Male and female urethra – description, its parts, hypospadia
First and second division of the trigeminal nerve, sensory trigeminal nuclei
Lymph nodes and collectors of the thorax and the chest wall, lymphatic drainage of the lungs
48. Pelvic floor muscles, perineal muscles, ischioanal fossa, pelvic fascias (draw a frontal section of the pelvis)
Larynx – position and syntopy, vascular and nerve supply (draw laryngoscopic view of the inlet)
Lumbar plexus and its branches
Projections of the heart, lungs and pleura onto thoracic wall, puncture of the thorax
49. Muscles and fascias of the back
Soft and hard palate, muscles of the soft plate (draw a scheme), isthmus of the fauces
Infraclavicular portion of the brachial plexus (draw a scheme), upper limb innervation
Mediastinum – division, borders (draw a transverse section)
50. Muscles of the shoulder girdle, fascias, axillary fossa
Vascular supply of the kidney, segments
Overview of muscular and skin innervation of the lower limb
Anatomical background for vessel puncture, pressure points, palpation
51. Axilla - boundaries, content, deltoid and scapular region
Lungs – description, syntopy, borders and projection onto thoracic wall, vascular and nerve supply, lymphatics
Sciatic nerve, paralysis of the common peroneal nerve
Retroperitoneal space, topography of its organs including large vessels
52. Muscles and fascias of the hand (draw transverse section), tendon sheaths, carpal canal
Urinary bladder – structure and position, fixation and syntopy in male and female (draw schemes)
Skin and motor innervation of the head and neck
Mechanics of respiration, pneumothorax
53. Muscles and fascias of the hip
Pleura – visceral and parietal, structure, borders of pleura, pleural dome and recesses (draw a scheme), innervation
Median and ulnar nerve and their palsy
Topographic anatomy of the male pelvis (draw a sagittal section)

54. Muscles and fascias of the thigh (draw transverse section), femoral triangle, popliteal fossa
Vas (ductus) deferens, spermatic cord, seminal vesicles
Cervical plexus, supraclavicular portion of the brachial plexus
Topographic anatomy of the female pelvis (draw sagittal section), mechanism of continence
55. Muscles, fascias and compartments of the leg and foot (draw transverse sections)
Penis – structure (draw a cross-section), vascular and nerve supply, lymphatics, mechanism of erection
Corticospinal (pyramidal) and corticonuclear tract
Heart development and its common birth defects
56. External and internal cranial base – openings for vessels and nerves
Vagina – structure and syntopy (draw uterus and vagina in a sagittal section)
Topography of the duodenum and pancreas (draw a scheme)
Lemniscal system (dorsal column tract), proprioceptive and tactile sensation, sensory loss in spinal cord lesions